MODIS
SCIENCE DATA SUPPORT TEAM
PRESENTATION

December 6, 1991

AGENDA

1. Action Items
2. MODIS Airborne Simulator (MAS)
3. MODIS SDST FY92 Work Plan
4. TEG Status
5. MODIS Team Leader Computing Facility Plan
6. System Simulations for AIRS

ACTION ITEMS:

08/30/91 [Lloyd Carpenter and Team]: Draft a schedule of work for the next 12 months. Include primary events and milestones, documents to be produced, software development, MAS support, etc. (A new draft is enclosed with the handout.) STATUS: Open. Due date 09/27/91.

10/04/91 [Phil Ardanuy and Team]: Prepare questions for the project to characterize the spacecraft position and attitude knowledge and the MODIS pointing knowledge in a way that will facilitate the evaluation of methods such as image registration to meet the science team requirements for earth location. (The letter to the project was prepared, 10/28/91.) STATUS: Open. Due date 10/18/91.

MODIS Airborne Simulator status (Liam Gumley)

Progress up to 5 December 1991

(1) MAS FIRE deployment

The MAS has flown FIRE missions on the following dates:

Date	Area covered	MAS data received	INS data received
11/12/91	Ferry flight to Houston	yes (subset)	yes
11/14/91	Coffeyville, Kansas	yes	yes
11/18/91	Coffeyville, Kansas	yes	yes
11/21/91	Coffeyville, Kansas	yes	yes
11/22/91	Coffeyville, Kansas	no	yes
11/24/91	Gulf coast, Louisiana	no	yes
11/25/91	Coffeyville, Kansas	no	yes
11/26/91	Coffeyville, Kansas	yes	yes
12/03/91	Gulf coast, Louisiana	no	no
12/04/91	Coffeyville, Kansas	no	no
12/05/91	Coffeyville, Kansas	no	no

The INS data for the flights from 11/12 to 11/26 was received on 12/4, and I have begun to process the data from the flights on 11/12 and 11/14. Further processing is dependent on the determination of valid calibration data for the visible/near-IR channels. Tom Arnold of Mike King's group is handling this at present.

I spoke to Chris Moeller in Houston on 11/26, regarding an anomaly in the data from the 11/14 flight. It appears that the pilot switched the data system tape recorder off during the turns between straight line flight tracks. Chris has seen this before occasionally, and it presents no special problems. The pilots do not normally turn off the tape recorder in flight. I also sent some plots of black body data from the 11/14 flight to Chris on 12/2. Noise in channels 7, 8 and 9 does seem to be significantly lower.

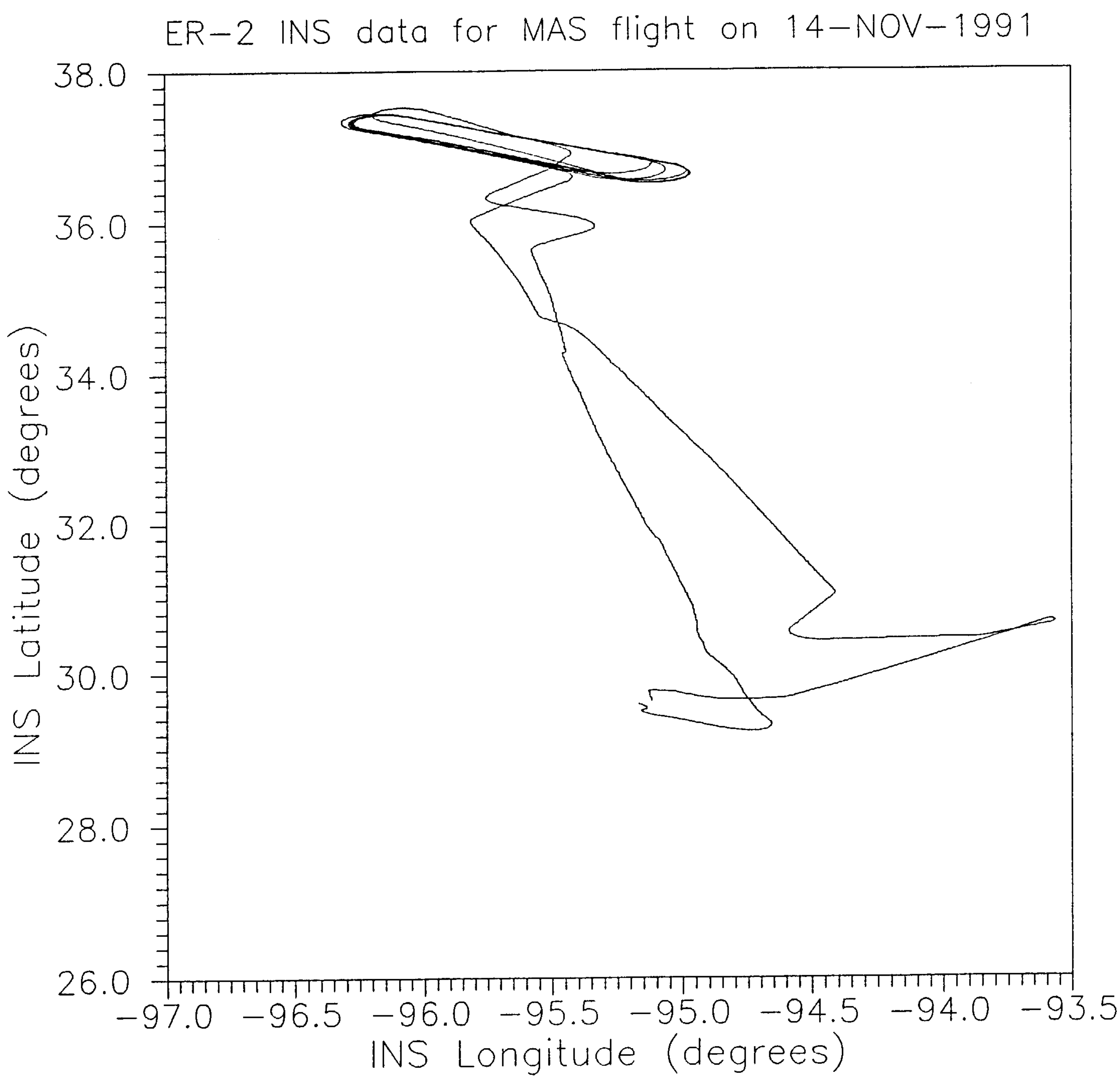
I spoke to Paul Menzel in Houston on 12/5 to check on the deployment status. He said the field team is leaving Houston on 12/8. The instrument is performing well, and one more flight may be done between the 12/6 and 12/8. He has performed some preliminary noise calculations on IR channel data obtained over the ocean, and said he is seeing noise of up to 1.5K in channel 7, and less than 0.5K in channels 8-12. He said this may mean that some averaging of the blackbody data will need to be done for the IR channels to avoid striping in the calibrated radiance imagery. The MAS processing software can be easily modified to accommodate this change, however an averaging strategy must be first be agreed upon.

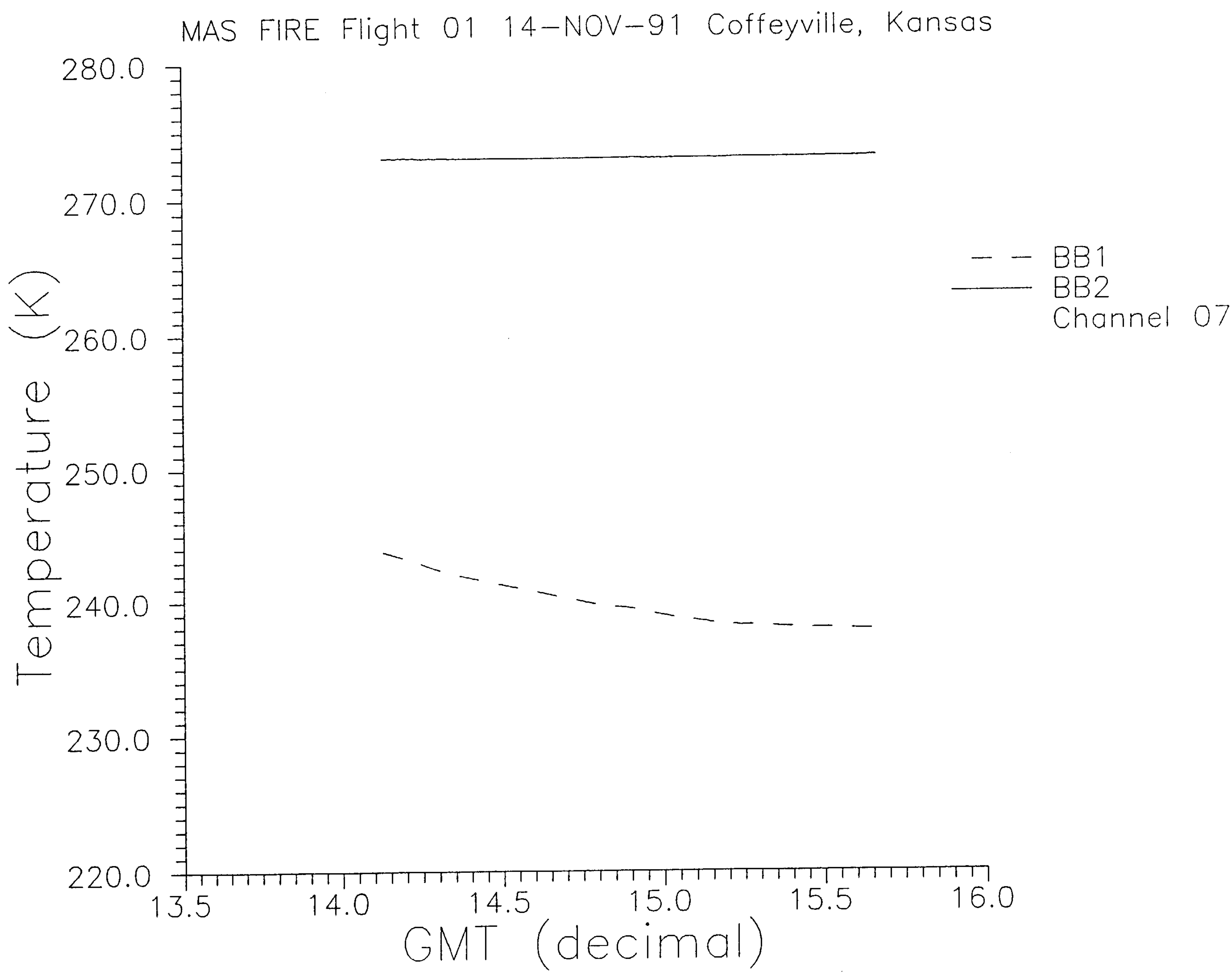
(2) Electronic link to Ames Research Center

I spoke to Jeff Myers at Ames Research Center on 12/5. He said that he knew Ames had a number of Internet nodes, but none were in his facility. They were aware that Internet links existed from Ames to GSFC but were not sure what transfer rates were possible over these links. I also asked when it was likely MAS data would be distributed on 8mm Exabyte tapes. He said it depends on when the aircraft tape recorder is changed to an Exabyte system. This is possible by Feb/92, and more likely will be implemented by Jun/92.

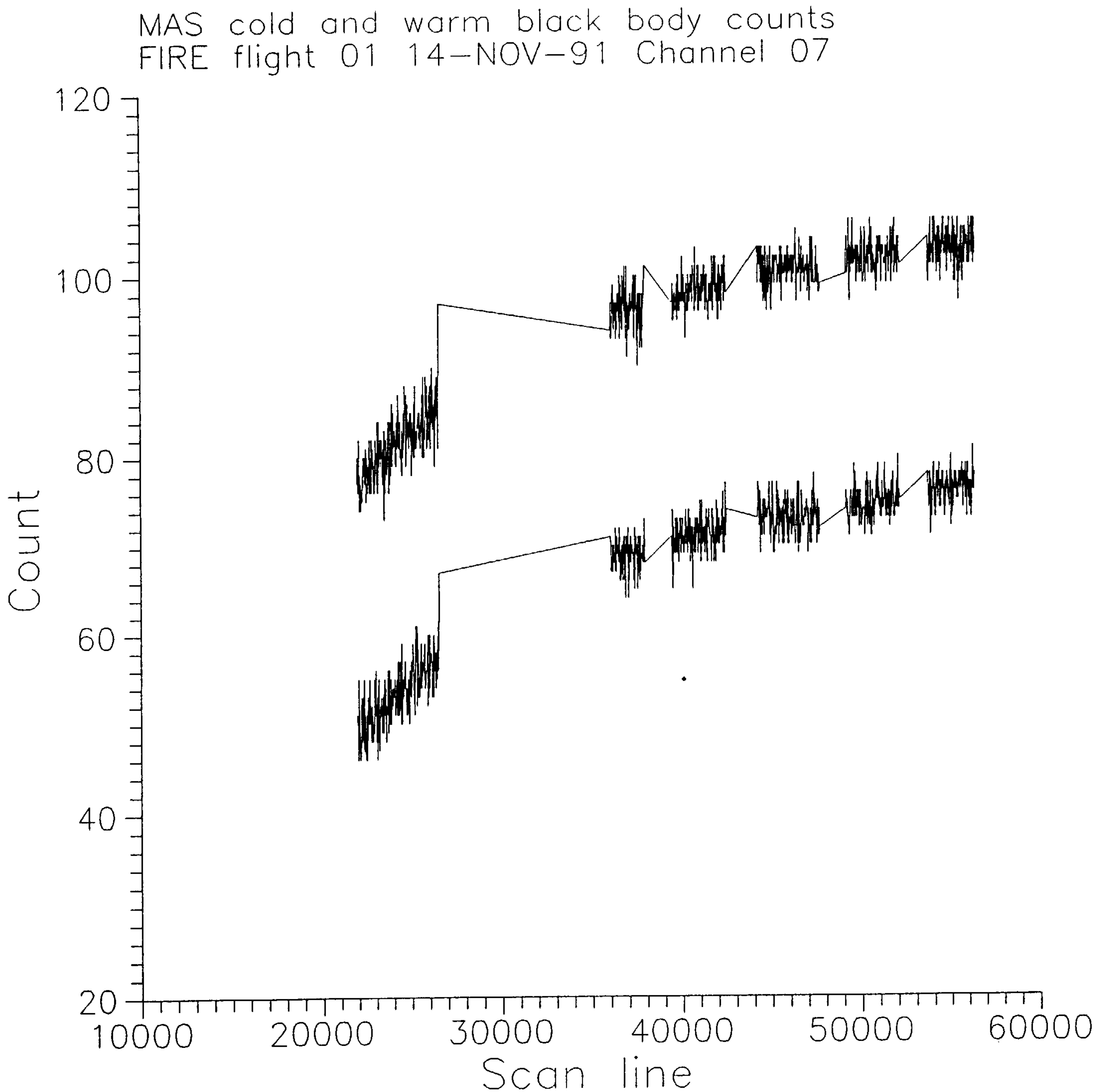
(3) Article on MAS for Earth Observer

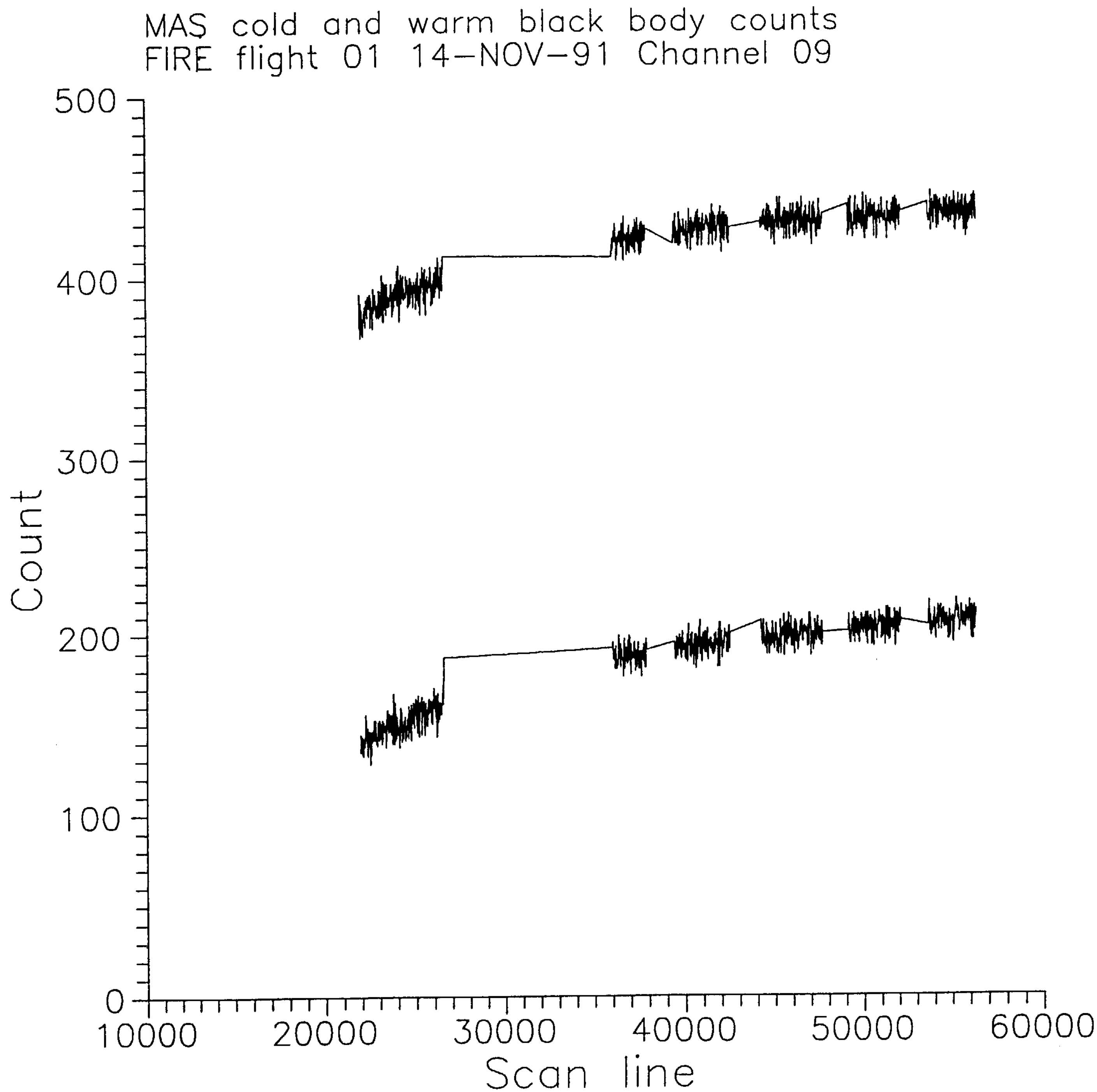
Mike King has suggested that an article on the MAS be prepared for submission to the Earth Observer. This would include a description of the instrument, some details on the FIRE deployment, and some sample imagery. Mike has asked that I prepare a first draft, which he will then review. This would be for the January/February 1992 issue (submission date would be the first week of February). Mike would first like to prepare a memo for the MAS team which summarizes some of these issues, and I will be assisting in that effort.


ER-2 INS data for MAS flight on 14-NOV-1991
38.0
36.0
34.0
32.0
30.0
28.0
26.0
INS Latitude (degrees)
-97.0
-96.5
-96.0
-95.5
-95.0
-94.5
-94.0
-93.5
INS Longitude (degrees)

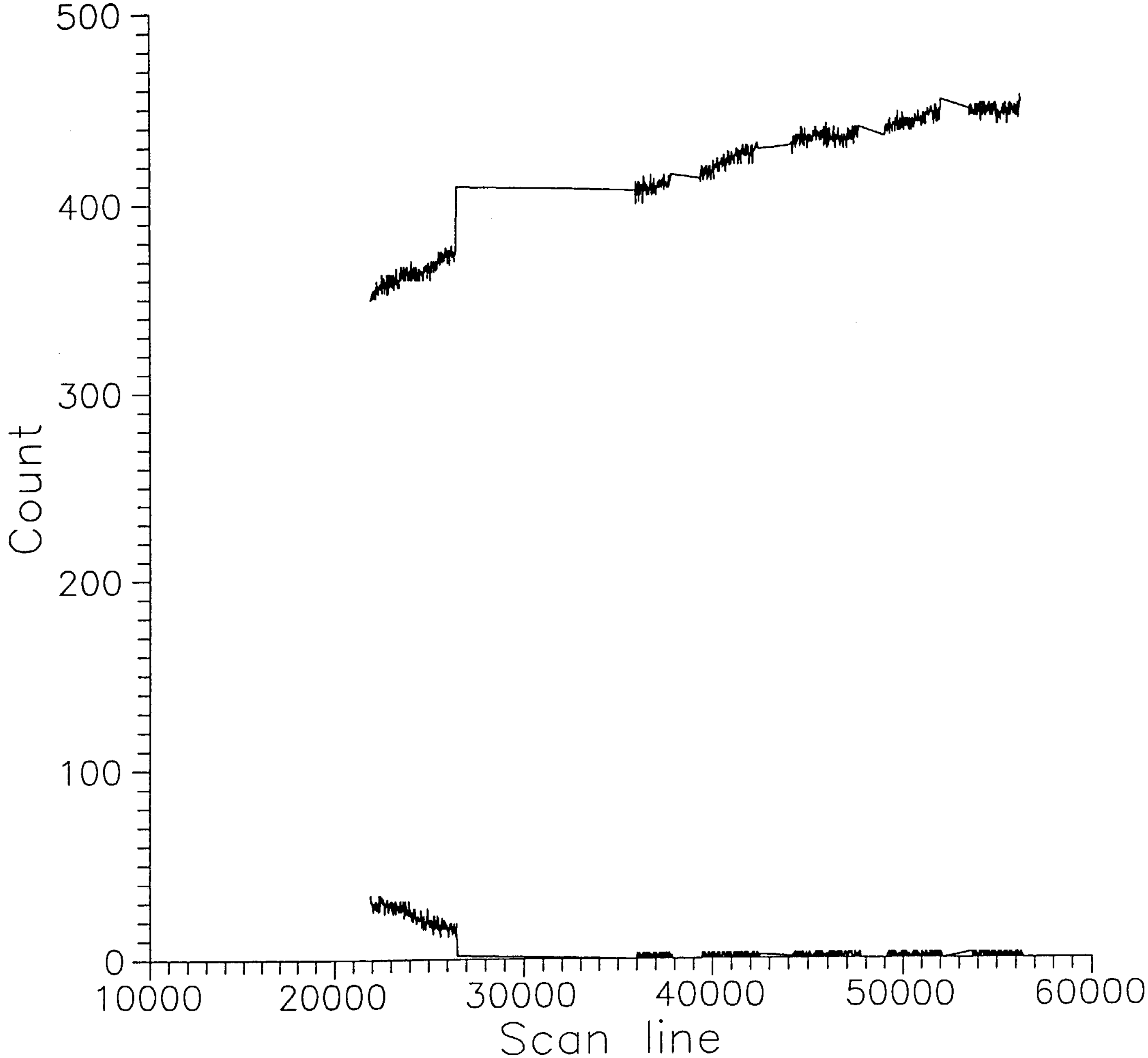


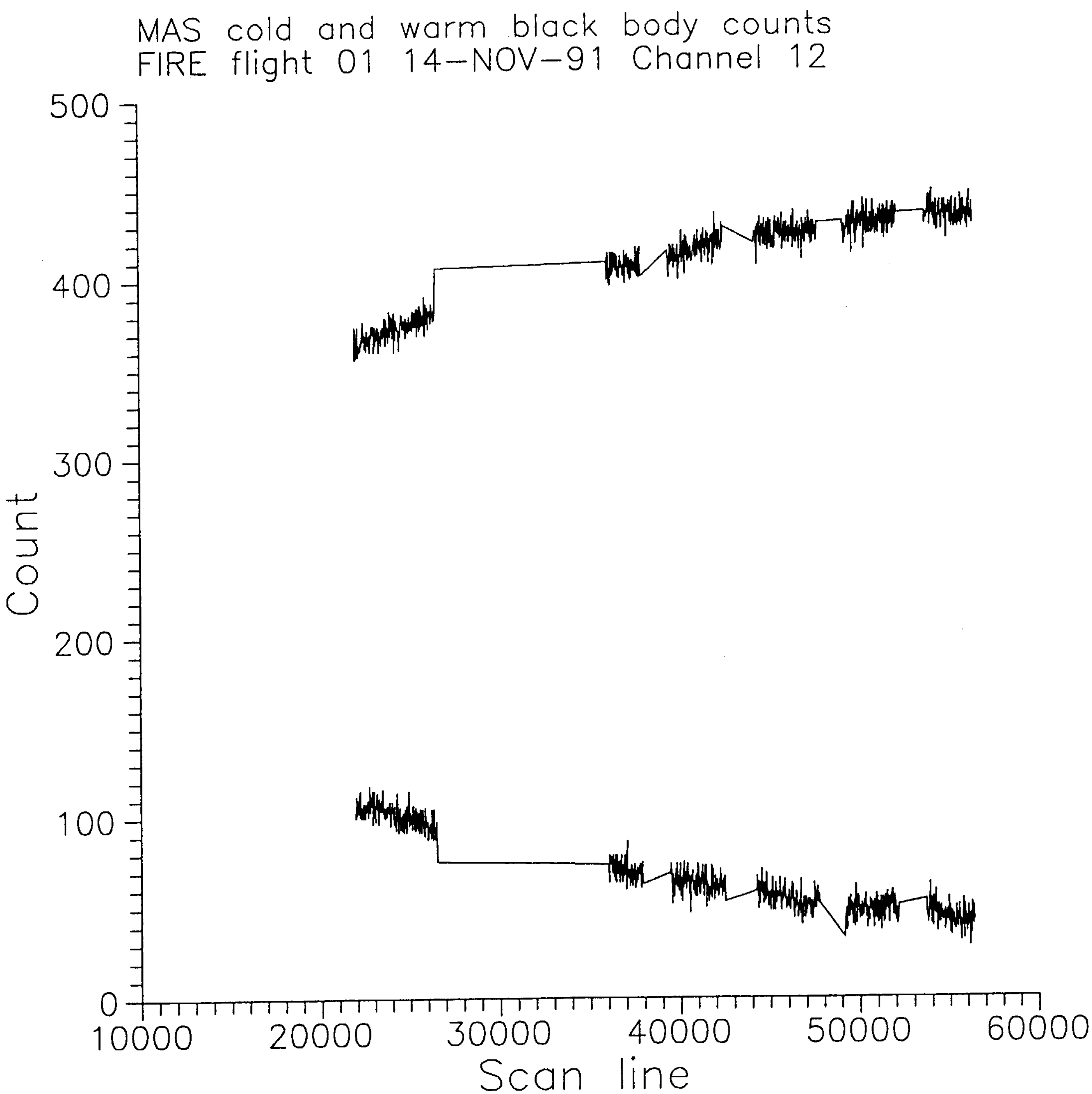
MAS FIRE Flight 01 14-NOV-91 Coffeyville, Kansas
280.0
270.0
260.0
250.0
240.0
230.0
220.0
Temperature (K)
13.5
14.0
14.5
15.0
15.5
16.0
GMT (decimal)
BB1
BB2
Channel 07


MAS cold and warm black body counts
FIRE flight 01 14-NOV-91 Channel 07
Count
120
100
80
60
40
20
10000
20000
30000
40000
50000
60000
Scan line


MAS cold and warm black body counts
FIRE flight 01 14-NOV-91 Channel 09
Count
Scan line
0
100
200
300
400
500
10000
20000
30000
40000
50000
60000

MAS cold and warm black body counts
FIRE flight 01 14-NOV-91 Channel 10




MAS cold and warm black body counts
FIRE flight 01 14-NOV-91 Channel 12
Count
Scan line
0
100
200
300
400
500
10000
20000
30000
40000
50000
60000

DRAFT

MODIS Science Data Support Team (SDST)

FY 1992 Work Plan

(Not to be confused with the Project Plan, the Software and Data Management Plan or the MODIS Team Leader Computing Facility Plan)

MODIS\PLANS\WORKPLAN.001
December 5, 1991

DRAFT

Table of Contents

1 Introduction

The objective of this work plan is to document the support to be provided by the MODIS Science Data Support Team (SDST) for FY 1992. The SDST provides support for the development of the MODIS science data processing system. The specific tasks for FY 1992 include the following:

(a) Generate a schedule for the development, validation, integration, operational testing, documentation, maintenance, modification, and configuration management of the MODIS science data processing algorithms. Circulate the schedule to the Team Members, and have it ready for a topic of discussion at the next MODIS Science Team Meeting.

(b) Identify requirements and define goals for Computer Aided Software Engineering (CASE) tools. Develop a plan for acquiring and testing tools to be used in the MODIS environment.

(c) Figure out what is needed from the Team Members with the algorithms they will provide. Define the software guidelines to be satisfied by Team Members algorithms such that the SDST can bring the algorithms to effective operational status in the EOSDIS environment.

(d) Develop a schedule for development of the MODIS algorithms for which the SDST is responsible (including Level-1A and Level-1B).

(e) Provide Level-1 science data processing for the MODIS Airborne Simulator (MAS).

(f) Identify the "first-purchase" Team Leader Computing Facility hardware and initiate the procurement. Develop a strategy for the evolution of the TLCF.

(g) Develop a Project Management System for the MODIS SDST, including schedules and milestone charts, documentation control plans, action item and tracking lists, significant assumptions, staffing, cost, earned value, etc.

(h) Develop a training plan to prepare SDST members for specialized tasks (CASE Tools, object oriented languages such as C++, etc.).

(i) Identify the resources required to carry out the work of the SDST, and develop a schedule of SDST activities for FY 1992.

(j) Develop the following documents:

MODIS SDST Project Plan,

MODIS Software and Data Management Plan,

MODIS Team Leader Computing Facility (TLCF) Plan.

Additional information on these tasks is provided in the following sections.

2 MODIS Software Development Schedule

The MODIS Science Team Members will develop their own algorithms for generating special products in addition to some of the core products. The SDST will provide support for porting and integrating the MODIS Science Team Members algorithms into the EOSDIS system. The SDST will also conduct operational testing, review documentation, and assure that Team Members algorithms meet the software standards set by the EOS Project.

The SDST will generate a schedule for the development, delivery, validation, integration, operational testing, documentation, maintenance, modification, and configuration management of the MODIS science data processing algorithms. The schedule will be circulated to the Team Members, and it will be ready as a topic of discussion at the next MODIS Science Team Meeting.

3 Computer Aided Software Engineering (CASE) Tools

The MODIS SDST will identify requirements and define goals for Computer Aided Software Engineering (CASE) tools. The SDST will develop a plan for acquiring and testing tools to be used in the MODIS environment.

4 Software Guidelines for Team Members Algorithms

The MODIS SDST will develop software guidelines to be satisfied by Team Members algorithms, so that the SDST can bring the algorithms to effective operational status in the EOSDIS environment. The MODIS SDST will provide support as necessary for compliance with the EOSDIS recommended coding and documentation standards for software to be tested, operated, and maintained in the PGS production environment.

The software is to be designed, coded, tested, and validated by the Team Members following the guidelines provided by the SDST (with support from the SDST as necessary). The software is then delivered to the SDST for porting, integration, testing, and validation on the TLCF, and for assurance that the software complies with the EOSDIS coding and documentation standards. The SDST then delivers the software to the EOSDIS for integration into the PGS production environment.

5 Schedule for SDST Algorithms

The MODIS SDST will generate a schedule for development of the MODIS algorithms for which the SDST is responsible. MODIS Level-1A and Level-1B algorithms, and some of the higher level algorithms will be developed, tested, validated and integrated on the TLCF by the SDST. Many of the utility algorithms will be handled in the same way.

5.1 MODIS Level-1A Algorithm

The MODIS Level-1A product has been defined in terms of its contents and reversibility. It has also been decided that the sensor data will not be unpacked. The scan cube has been identified as a meaningful unit of data for some purposes, but the scan cube is too small as a unit for ordering and distributing the data. A suitable data structure for distribution will be determined. A schedule will be generated for the Level-1A algorithm development.

5.2 MODIS Level-1B Algorithm

For the MODIS Level-1B product, the data will be calibrated and Earth-located. The scan cube is still a meaningful unit of data, but a larger unit is needed for distribution. With calibrated radiances, and with no further reversibility requirement, there is more flexibility in defining the format and structure. An examination of this issue will be coordinated with the science team members to assure that their requirements are met. The Level-1B design must be refined to provide for ground location information based upon image registration and the use of a digital elevation model (DEM). A schedule will also be generated for the Level-1A algorithm development.

6 MODIS Airborne Simulator (MAS) Data Processing

Level-1 science data processing support will be provided for MODIS Airborne Simulator (MAS) experiments. Processing code (currently at Version 1.x stage) will be upgraded to Version 2.x. The code will also be modified and updated on a continuing basis as required or requested after feedback from the Science Team, M. King and P. Menzel. Imaging capabilities incorporating NetCDF on: VAS, IRIS, PC's, MAC, etc. will be implemented as part of the tools/utilities suite.

For each flight, the MAS Level-1 data product in NetCDF format will be delivered within five working days from receipt of the complete data set (Level-0 sensor data plus INS data). A "User's Guide" describing the data and indicating how it is to be read will be provided along with the data.

For field experiments, it is valuable to have someone in the field, (or in close contact with those in the field) to check data quality, assist in correcting instrument problems or failures, calibration, etc. This is especially important in early test stages. Support may also be required in flight planning; e.g. weather conditions at the site. If ground or in-situ data are taken in conjunction with MAS overflights, we may act as a central distributor.

Registration of MAS imagery may require investigation. Integration of MAS processing into the Version 0 Distributed Active Archive Center (DAAC) must also be investigated. Imaging capabilities incorporating NetCDF on: VAX, IRIS, PC's, MAC, etc. will be implemented as part of the tools/utilities suite.

7 MODIS "First-Purchase" TLCF

The MODIS SDST will identify the "first-purchase" Team Leader Computing Facility hardware and initiate the procurement. For the first purchase, a UNIX work station will be selected and installed in the TLCF, supporting CASE tools, Fortran, C and C++ (or some other object oriented language). The system will be used for MAS processing and development of utilities and Level-1 algorithms.

A strategy will be developed for the evolution of the TLCF. The TLCF computing capacity (CPU power, storage capacity, communications, displays, I/O, etc.) must grow in response to the increasing requirements resulting from scheduled growth and phasing of algorithm development, rehosting, integration, testing, validation, modification and evolution. Increasing capacity will also be needed to support instrument characterization and calibration. The design of the TLCF must be responsive to the planned life-cycle evolution of requirements, operating environment, and expected work load.

8 MODIS SDST Project Management System

The MODIS SDST will develop a Project Management System, including schedules and milestone charts, documentation control plans, action item and tracking lists, significant assumptions, staffing, cost, schedules, earned value, etc.

9 MODIS SDST Training Plan

The MODIS SDST will develop a training plan to prepare its members for tasks requiring the use of CASE Tools, the UNIX operating system, object oriented languages (such as C++), and system management of the TLCF workstation, .

10 MODIS SDST Deliverable Documents

The MODIS SDST will develop the following documents:

MODIS SDST Project Plan,

MODIS Software and Data Management Plan,

MODIS Team Leader Computing Facility (TLCF) Plan.

10.1 MODIS SDST Project Plan

The MODIS Science Data Support Team Project Plan will document the support to be provided by the MODIS (SDST) to the MODIS Science Team Leader and Team Members within the context of the EOS objectives, the MODIS objectives, and within the EOSDIS structure. The Project Plan will address the objectives, related activities, technical plan, management, end item schedules, resources, reviews, and quality assurance as they relate to the MODIS SDST activities.

A strawman was delivered in October, 1991. The draft version will be delivered in March 1992, and the final version will be delivered in July 1992. Revisions will be delivered as required.

10.2 MODIS Software and Data Management Plan

The MODIS Software and Data Management Plan will describe the manner in which the MODIS instrument data will be acquired, calibrated, validated, Earth located, processed, archived and distributed to the science users, within the EOSDIS data management structure. The end-to-end data flow from its origin at the MODIS instrument to the science product archival and distribution will be described in the EOSDIS context.

The Plan will further define the nature of the algorithms to be produced and the computer resources and software tools required for algorithm development, data processing, and generation of special products. A configuration management system will be provided for the protection and assurance of operational software and data products.

The collection and management of input data, ancillary data and data from external sources will be described as they relate to the processing and production of MODIS products. The manner in which reference data for ground control points, digital elevation and terrain models, atmospheric models, coastline definitions, etc. will be collected and integrated into the system will be specified.

The Plan will describe the output products to be produced, including standard, quicklook, browse, and special products. The descriptions will include the volume, product level, and format of the output data. The use of Investigator Working Group (IWG) approved standard formats will be emphasized.

The software development and validation schedule will be consistent with the EOS Science Software Development Schedule. It will be based upon the three initial software versions required prior to launch:

V1 launch minus 33 months: Test migration from TLCF to the EOSDIS, exercise interfaces, and test execution in operational environment.

V2 launch minus 21 months: Correct any problems in V1, complete operator interface, generate all messages.

V3 launch minus 9 months: Software ready for launch. Final integration, test of operations procedures, training of operations staff.

Each delivery will include software, test data, user's guide, operations guide, and software version description.

Consideration will be given to the processing and management of quick look data for field experiments, targets of opportunity and special investigations. A plan will be provided for the generation and delivery of metadata and browse products.

The responsibilities of the MODIS Science Data Support Team will be identified in terms of data product requirements, operational scenarios, algorithm integration and testing, design and implementation of the operational processing system, data product validation, integration of computer resources, and development of documentation during the definition, prelaunch and postlaunch phases.

A "strawman" version of the plan will be delivered in January 1992. The draft version will be delivered in June 1992. A revision will be delivered in June 1993, and the final version will be delivered in June 1994. Software review materials will be delivered annually.

10.3 MODIS Team Leader Computing Facility Plan

The MODIS Team Leader Computing Facility (TLCF) Plan will identify and document the functional, operational and performance requirements, operations concepts, and science scenarios for the TLCF.

The MODIS TLCF must support pre- and post-launch algorithm development, integration, testing, validation, modification and evolution. It must also provide computing resources for the

MODIS Team Leader and Goddard Team Members, and it will provide support for quality control and test of the MODIS products. Special products for the Team Leader and some of the Goddard team members, will be generated on the TLCF. These requirements will be addressed in the TLCF Plan.

The TLCF computing capacity (CPU power, storage capacity, communications, displays, I/O, etc.) must grow in response to the increasing requirements resulting from scheduled growth and phasing of algorithm development, rehosting, integration, testing, and validation. Increasing capacity will also be needed to support instrument characterization and calibration. The design of the TLCF must be responsive to the planned life-cycle evolution of requirements, operating environment, and expected work load. The TLCF Plan will be based upon these life-cycle requirements.

The plan will include costs and schedules for the purchase of equipment and software, facilities and services to be provided by others, and the networking requirements.

A "strawman" version of the plan will be delivered in January 1992. The draft version will be delivered in June 1992. The final version will be delivered in June 1994. Revisions will be delivered as needed.

11 MODIS SDST Resources and Schedule

The resources required to carry out the work of the SDST, and the schedule of SDST activities for FY 1992 are shown in the attached charts and tables.

Tom Goff's Status
for
5 December, 1991

TGoff on GSFC mail, or teg@LTPIRIS2.GSFC.NASA.GOV

* Contact was made with a member, Andy Pursch, of the AIRS Data System design team at JPL. They have decided to use HDF for AIRS data. This decision was based on their historical use of HDF for the HIRS/2 and MSU data sets. These data sets are much smaller that MODIS or AIRS data sets and therefore are not limited to normal computer disk sizes. They are planning to use HDF for the AIRS level 3 and above products which have a much smaller data volume than the AIRS level-0 through level-2 products. They have not looked into the design of their Level-1 processor or the resultant data volumes required for the data storage inefficiencies of HDF compared to NetCDF. They are planning to use the VSET facilities within HDF to supply data types with fewer bits: 16 bit data for example.

  He also mentioned that he was told by a colleague that NetCDF was less efficient in processing time than HDF. If time allows, it would be useful to create an HDF format conversion program for a sample MAS data set to be used as a comparison of the efficiencies of NetCDF versus HDF in processing time and data storage requirements.

  Mention was made that an effort to combine NetCDF flexible data types with HDF hierarchical philosophies to produce an even better format has been proposed to the EOS project. This would be a desirable area for the MODIS and other teams to support.

* The Think "C" compiler on the Macintosh has been used to compile the XDR subset of the NetCDF libraries on the Mac. The library compiles correctly but does not produce the correct results when the XDR test routine is executed. Further delving into the code of the XDR routines will be needed to determine the problem and fix it. Communication, via the internet, has indicated that a user at USGS had a (hard to get a hold of) contractor that successfully installed NetCDF on the MAC. This connection is being pursued in parallel with the in-house debugging effort as time and machine resources allow.

* Version 2.0 of the NetCDF library has just been announced for distribution by UCAR. Our current versions will be updated as time allows - after the current flurry of MAS engineering and FIRE experiment data is processed.

DISCUSSION ITEMS

* We would like to assemble a list of coding documentation innovations and suggestions as a discussion item for all Team Members and interested parties. Perhaps we can post some code "targets for criticism" on the MODIS bulletin board.

* Items to be considered in the creation of a TLCF. A meeting with all involved persons to discuss peripherals, hardware and software manufacturer support, training for C, C++, operating system, UNIX, architectural and operating system internals, etc.

* A more direct access to the MAS processing computer.

SGI C and FORTRAN process interfacing

Thomas E. Goff
teg@ltpiris2.gsfc.nasa.gov

```
c  TEG's FORTRAN main and subroutine to determine parameter passing to/from
c  C functions.  See the listing of: fun.c for details.

      character hi*20
      integer*2 error, fun, number
      hi = 'Hi there,'//char(0)
      number=30
      error = fun(hi,number)
      write(*,'("Error: "I10)')error
      end

      subroutine rest(back,numb,end)
      character back*(*),end*(*)
      integer*4 numb
      write(*,'(A,A,/,"numb="I10)')back,end,numb
      return
      end

c  Notes: Examine the "magic" required for string passage!  FORTRAN needs
c  a starting address and a byte length for 'char' type variables.  The
c  positions of these two items in the function argument list are an SGI
c  convention.
c        FORTRAN subroutine or function external names need an _ <under
c  score> character appended when referencing the C proceedure name.
c  FORTRAN calls need to be in lower case to match the C convention.
c        Data types for arguments must match.  The type of a function
c  appears to be forced to I*4 (note missmatch of C int fun_ type and
c  FORTRAN I*2 fun.
```

*****

```
/*  This is TEG's C subroutine to test the passing of arguments to/from
    a FORTRAN main and subroutine and this C function.  See the file: test.f
    for the FORTRAN parts.  Note the funny placement of the string lengths
    in the C and FORTRAN routines!  This works on the SGI IRIS, no bets
    on other machines!  This will NOT work on MicroSoft C and FORTRAN!! */

char out[] = "glad to see you";     /* must be global */
char tail[] = " again!";
long num2;
int fun_(char *buff, short *num1)  /* cast and pointers required */
{
  printf("The test character string is: %s ",buff);
  num2=(short) *num1 + 20;
  rest_(out,&num2,tail,strlen(out),strlen(tail));
  return(20);
}
```

Approximate Projections of Near-Te MODIS Team Leader SCF Utilization	1991				1992				1993				1994				1995			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
External Milestones								▼[1]				▼[2]			▼[3]					▼[4]
Software Implementation Support																				
Evaluate and select CASE Tools																				
Run CASE Tools																				
Project Management Tools																				
Software Guidelines and Standards Validation																				
Software Configuration Management																				
ECS Toolkit Evaluation (Beta Testing)																				
Prototype Data Processing																				
MAS[5] Algorithm Development and Maintenance																				
MAS[5] Operational Processing																				
Data Format Implementation and Testing																				
Image Registration Trials																				
DEM Correction Trials																				
Team-Member-Defined Support Processing																				
MODIS Data Simulation																				
Preliminary Data Cataloging and Distribution System																				
Integration with Version-0 DAAC																				
MODIS Level-1 Software Implementation																				
Level-1A Algorithm Development																				4
Level-1B Algorithm Development																				4
Integration and Testing of Version-1 Software																				
Generate Simulated MODIS Data																				
Preliminary Standalone Algorithm Tests																				
Standalone Algorithm Tests																				
Integrated Algorithm Tests													6			7		8		

[1]ECS Contract Award
[2]PDR-PGS Architecture Chosen (approx.)
[3]PGS-compatible machine delivered (approx.)
[4]Version 1 software due
[5]MAS or a successor instrument
[6]Team Member Version 0 code at SDST for integration and testing (with selected TMs, not contractually required), simulated data needed
[7]Review progress, make changes
[8]Team Member Version 1 code due at SDST for integration and testing

Near-Term Communications Requirements for the MODIS Team Leader SCF

Function	Remote Site	Environment	Protocol	Medium	Rate (Kbps)	Standard
Remote SDST Support	Local	X-Windows/MOTIF	CSLIP	Phone Lines (4)	14.4	V32bis, V42bis
Run CASE Tools	SCFs	X-Windows/MOTIF	CSLIP	Phone Lines (3)	14.4	V32bis, V42bis
			TCP/IP	Internet		
Project Management Tools	Local		TCP/IP	Goddard Network		
ECS Toolkit Evaluation (Beta Testing)						
ESN Toolkit	PGS			ESN		
SMC (CASE) Toolkit	PGS			ESN		
IMS Toolkit	PGS			ESN		
	Anywhere		TCP/IP	Internet		
	Anywhere		Phone Lines (1)		14.4	V32 bis, V42 bis
Team-Member-Defined Support Processing	SCF		Phone Lines (1)		14.4	V32 bis, V42 bis
Preliminary Data Cataloging and Distribution System	Anywhere		Phone Lines (1)		14.4	V32 bis, V42 bis
Integration with Version-0	DAAC				56	

SYSTEM SIMULATIONS FOR AIRS[1]

Objectives: to generate a realistic AIRS test data set and test the AIRS standard product generation code "as it really is supposed to work." The guiding principle is the delivery of the mission-ready software to EOSDIS. The simulated data will also be provided to the investigators, who may chose to use the data to develop science algorithms along the way. An additional interest of the AIRS team is in encouraging use of the same physics, statistics, and plotting packages and conventions.

At the last science team meeting, team members proposed a cooperative development effort. Rather than a "bake-off," which has been advocated in the past as a competition between alternative algorithm developers for selection as the standard retrieval algorithm, the AIRS team now favors a collaborative effort. Algorithm developers are being encouraged to design their algorithms and write their software so that the best features from different activities may be combined ("mix and match").

The AIRS simulation philosophy follows two heritages: (1) the development of a meteorological sounder (PMIRR) for the Mars Observer, for which instrument concepts and algorithms have been tested using output from a Martian General Circulation Model (GCM); and (2) simulation studies performed to test the advantages of statistical versus physical retrievals for HIRS/AMTS by Phillips, Susskind, and McMillin (published in J. Atmos. and Oceanic Tech.).

Based on these analogies, NOAA will provide 30-40 km resolution model fields of temperature and humidity in regions of interesting meteorological phenomena. Specific candidate cases include: (1) Gulf of Mexico; (2) mid-west severe storm; (3) cold air outbreak; (4) winter cyclogenesis; and (5) Rockies/semi-arid. The team will develop partial AIRS swaths from these data. Cloud amount and height will be "determined" from the model derived cloud liquid water content. Issues to be resolved include horizontal interpolation, FOV shape (round vs. square), input guess, microwave simulation, and cloud simulation (which forms the main part of problem). The timing for generation of these data sets is 1.5-2 years down the road from now.

The AIRS team is performing the following phased set of near-term simulation objectives: (1) a read test on anonymous FTP for the rapid transmittance algorithm which is in place at this time; (2) a write test, to be in place by February 1992 using clear nighttime radiances; (3) daytime clear radiances; and finally (4) cloudy daytime radiances.

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[1]Contact: Bob Haskins, JPL, Mail stop 183/301, 4800 Oak Grove Drive, Pasadena, CA 91109